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CLAIMS

1. An internal combustion engine having a valve mechanism which comprises
- 5 a gas exchange poppet valve (14),
a camshaft (10) rotatable in synchronism with the engine crankshaft and having a cam (12) for operating the valve (14),
a valve actuator (20) acting on the poppet valve (14)
- 10 to open and close the valve, and
an intermediate rocker (30) having a follower (34) acted upon by the cam (12) and a contoured surface (36) that acts on the valve actuator (20) to open and close the valve (14) in synchronism with the rotation of the cam (12), the
- 15 intermediate rocker (30) having a pivot axis that is movable in order to vary the valve lift,
characterised in that
the intermediate rocker (30) is mounted about a pivot shaft (32) that is moved to vary the valve lift in response
- 20 to rotation of the pivot shaft (32) about its own axis, and
the pivot shaft (32) is constrained to move along a path which is such that, while the cam follower (34) is on the base circle of the cam (12), the valve actuator (20) remains stationary and a substantially constant clearance is
- 25 maintained between the contoured surface (36) of the intermediate rocker (30) and the valve actuator (20) during displacement of the pivot shaft along the path.
2. An engine as claimed in claim 1, wherein the pivot
- 30 shaft (32) is located on the intermediate rocker (30) between the cam follower (34) and the contoured surface (36).
3. An engine as claimed in claim 1 or 2, wherein the
- 35 valve actuator is constructed as a valve actuating rocker (20) pivoted at one end, acting on the valve (14) at its other end and having between its ends a part-cylindrical contact

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surface or a roller follower (24) acted upon by the contoured surface (36) of the intermediate rocker (30).

4. An engine as claimed in claim 3, wherein the pivot
5 at the said one end of the valve actuating rocker (20) comprises a hydraulic lash adjuster (22).

5. An engine as claimed in claim 3 or 4, wherein the pivot shaft (32) is journalled in a link (38) that
10 constrains the pivot shaft (32) of the intermediate rocker (30) to move along arc centred on the axis of the roller (24) or cylindrical contact surface of the valve actuating rocker (20).

15 6. An engine as claimed in claim 5, wherein the pivot shaft (32) passes with clearance through a bore in an eccentric sleeve (44) rotatably supported in a stationary bearing block of the engine.

20 7. An engine as claimed in claim 6, wherein the eccentric sleeve (44) is coupled to the shaft by means of a pin (46) which is free to slide relative to at least one of the sleeve (44) and the shaft (32).

25 8. An engine as claimed in any preceding claim, wherein a phase change mechanism (50) is provided between the engine crankshaft and the camshaft (10).

9. An engine as claimed in any preceding claim,
30 having two valve mechanisms controlling the flow of gas into or out of each engine cylinder, wherein the cam profiles and/or the contoured surfaces of the intermediate rockers actuating the two valves of each cylinder have a different geometry from one another, such that the valve lift
35 characteristics of the two valves differ from one another as the valve lift is reduced.